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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/591,111

10/12/2006

Markus Henne

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EXAMINER

WU, VICKI H

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/591,111	<b>Applicant(s)</b> HENNE ET AL.	
	<b>Examiner</b> VICKI WU	<b>Art Unit</b> 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 June 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-12 and 15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-12, 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 August 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

This is a non-final Office action in response to applicant's arguments filed on 6/04/2009, the response to a non-final Office action on 3/04/2009, the claims submitted on 8/31/2006.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 USC 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 3, 5, 6, 7, 8, 9, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 3,765,998 (Oswald) in view of US Patent 3,317,363 (Weber).

Regarding claims 1, 3, 5, 6, 7, 8, 9, 10, Oswald teaches a method for producing fiber-reinforced sheet material which is impregnated with a thermoplastic plastics material matrix, containing at least one planar fiber web (col. 5 Example 1), comprising the steps of impregnating at least one

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fiber web with a reactive starting material containing cyclic or macrocyclic oligomers of a polyester; coating the impregnated fiber web on one or both sides with an at least partially solid, fiber-free outer layer containing a polymerized polyester (PET) (col. 9 lines 29-33), and the fiber web which is coated with the outer layer is pressed in a pressing device to form a sheet material, wherein the reactive starting material is polymerized into a plastics material matrix surrounding the fiber structures and permanently connected to the outer layer (col. 5 Example 1 lines 65-68; col. 9 Examples 8, 9).

Oswald further teaches that the sheet material is produced continuously and in line with the supply of web-shaped fiber structures (col. 3 lines 35-40), that said fiber structure of the fiber web may be supplied preimpregnated (col. 9 lines 60-61), that the fiber structure which is impregnated with reactive starting material is supplied continuously and in a web-shape and brought together to form a fiber web, and the fiber web is coated in line on one or both sides with an outer layer, in the form of a film or an extruded film (col. 3 lines 35-40; Examples 1 and 9), and that the fiber web is coated on one or both sides with an outer layer is pressed in line in a feed-through press to form a sheet material (18, 19, Figure 1; col. 10 lines 3-5; col. 5 Example 1 lines 65-68).

Oswald does not expressly disclose that the outer layer is applied to the fiber web in the form of a pure plastic material film unrolled from a coil.

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Weber teaches the formation of a thermoplastic foam between two sheets of plastics materials (col. 1 lines 23-34) in which an outer layer of material is applied to the inner thermoplastic panel in the form of a pure plastic material film unrolled from a coil (col. 6 lines 18-20; 40, Figure 1).

It would have been obvious to one ordinarily skilled in the art at the time the invention was made to incorporate the specific application process of Weber to modify the method of Oswald. The rationale to do so would have been the motivation provided by the teaching of the advantages to using the process of Weber; that in using said process, the resulting product would exhibit an enhanced moisture barrier with higher strength and insulative properties, and are lightweight and low cost yet maintain their structural integrity (Weber: col. 2 lines 14-24).

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oswald in view of Weber and in further view of US Patent 6,420,047 (Winckler).

Regarding claim 2, the teachings of the limitations of Oswald in view of Weber are detailed above in the rejection of Claim 1 under 35 U.S.C. 103(a). Oswald in view of Weber does not expressly disclose that the reactive starting material contains cyclic oligomers of the PBT (CPBT) blended with a polymerization catalyst.

Winckler teaches the method of creating a blend material comprised of macrocyclic polyester oligomers of PBT (polybutylene tetraphthalate) or PET / PBT (polyethylene tetraphthalate) with a polymerization catalyst, in order to use said blend material to produce articles using

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injection/rotational/compression molding, resin film infusion, etc. (Column 3 lines 30-60; column 5 lines 40-50; columns 21-22 part g).

It would have been obvious to one with ordinary skill in the art at the time the invention was made to incorporate the disclosed blend material of reactive oligomers and polymerization catalyst of Winckler into the process of Oswald, so that the applied outer layer would polymerize and bond with said blend. The rationale to do so would have been that the blend material of Winckler has superior processing characteristics relative to conventional thermoplastics precursors, with a stable and long shelf life, and allowing for easy production, storage, transportation and processing (Winckler: column 3 lines 30-40). By incorporating said blend material of Winckler into the manufacturing process of Oswald, the durability and longevity of the finished fiber-reinforced material of Oswald may be increased.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oswald in view of Winckler and in further view of US Patent 5,902,541 (Imai).

Regarding claim 11, Oswald teaches a method for producing in the cavity of a molding tool a fiber-reinforced plastics material article containing a fiber structure embedded in a plastics material matrix made of a polyester, comprising providing a cavity of a molding tool with at least a fiber structure and a reactive starting material; closing the molding tool and applying pressure and/or heat to the cavity wherein the reactive starting material is polymerized to form a thermoplastics material matrix (col. 5 Example 1 lines 65-68).

Oswald does not expressly disclose that said reactive starting material contains cyclic or macrocyclic oligomers of the polyester or a polymerized polyester, such as PET, PBT, or PBT blend, or that the wall of the mold cavity is coated with a film made of a reactive starting material prior to applying pressure and/or heat.

Winckler teaches the method of creating a blend material comprised of macrocyclic polyester oligomers of PBT (polybutylene tetraphthalate) or PET / PBT (polyethylene tetraphthalate) with a polymerization catalyst, in order to use said blend material to produce articles using injection/rotational/compression molding, resin film infusion, etc. (Column 3 lines 30-60; column 5 lines 40-50; columns 21-22 part g).

Imai teaches a method of injection molding for producing shaped resin articles (Abstract) in which the wall of the mold cavity is coated with a film made of a reactive starting material prior to applying pressure and/or heat (col. 2 lines 5-14).

It would have been obvious to one with ordinary skill in the art at the time the invention was made to incorporate the disclosed blend material of reactive oligomers and polymerization catalyst of Winckler into the process of Oswald, so that the applied outer layer would polymerize and bond with said blend. The rationale to do so would have been that the blend material of Winckler has superior processing characteristics relative to conventional thermoplastics precursors, with a stable and long shelf life, and allowing for easy production, storage,

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transportation and processing (Winckler: column 3 lines 30-40). By incorporating said blend material of Winckler into the manufacturing process of Oswald, the durability and longevity of the finished fiber-reinforced material of Oswald may be increased.

It would have been obvious to one ordinarily skilled in the art at the time the invention was made to incorporate the specific mold-coating technique of Imai to modify the method of Oswald in view of Winckler. The rationale to do so would have been the motivation provided by the teaching of the advantages to using said technique of Imai; that in using said technique, the probability of the resulting molded article having a poor reproduction of its profile from the mold inner surface, as well as any occurrences of hesitation marks on said article, is much decreased (Imai: col. 2 lines 9-14).

Claims 12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oswald in view of Weber in further view of US Patent 4,178,277 (Gebauer) and in further view of Winckler.

Regarding claims 12 and 15, Oswald teaches a method for producing a multi-layer composite containing at least one layer made of a thermoplastic material and an outer layer connected thereto made of a fiber-reinforced sheet material (col. 9 Example 8), characterized in that both the thermoplastic material and the sheet material contain a plastics material matrix made of a polyester and, to produce the multi-layer composite, a single-layer or multi-layer fiber web which is impregnated or coated with a reactive starting material (PET) (col. 9 lines 29-33),



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connected to the thermoplastic material layer made of a polymerized polyester to form a laminate, and the reactive starting material is polymerized, with formation of the plastics material matrix of the sheet material and with an intimate connection to the foamed material layer, to form a polyester (col. 9 Examples 8, 9), wherein the thermoplastic material layer is coated on either side with a sheet material (col. 10 lines 1-3; Figure 1).

Oswald does not expressly disclose that said at least one thermoplastic layer is foamed, or that said starting material contains cyclic or macrocyclic oligomers of the polyester blended with a polymerization catalyst, or that said starting material is loaded with a blowing agent and extruded by means of an extruder on the impregnated or coated fiber web and is expanded with relief of pressure to form a foamed material layer, which is brought together with the impregnated or coated fiber web and is connected thereto, and wherein the starting material is extruded through a perforated plate in the form of individual strands which on discharge expand to form a foamed material and mutually adhere to form a foamed material layer.

Weber teaches a method for producing a multi-layer composite containing at least one layer made of a foamed material and an outer layer connected thereto (col. 1 lines 31-33; 46-51) wherein the foamed material contains a starting material that is loaded with a blowing agent and is extruded by means of an extruder on the impregnated or coated fiber web and is expanded with relief of pressure to form a foamed material layer, which is brought together with the impregnated or coated fiber web and is connected thereto (col. 5 lines 2-11; 2, Figure 1).

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Gebauer teaches a process of modifying polyesters in which the starting material is extruded through a perforated plate in the form of individual strands which on discharge expand to form a foamed material and mutually adhere to form a foamed material layer (col. 7 lines 13-25).

Winckler teaches the method of creating a blend material comprised of macrocyclic polyester oligomers of PBT (polybutylene tetraphthalate) or PET / PBT (polyethylene tetraphthalate) with a polymerization catalyst, in order to use said blend material to produce articles using injection/rotational/compression molding, resin film infusion, etc. (Column 3 lines 30-60; column 5 lines 40-50; columns 21-22 part g).

It would have been obvious to one ordinarily skilled in the art at the time the invention was made to incorporate the specific extrusion process of Weber to modify the method of Oswald. The rationale to do so would have been the motivation provided by the teaching of the advantages to using the process of Weber; that in using said process, the resulting product would exhibit an enhanced moisture barrier with higher strength and insulative properties, and are lightweight and low cost yet maintain their structural integrity (Weber: col. 2 lines 14-24).

It would have been obvious to one ordinarily skilled in the art at the time the invention was made to incorporate the specific extrusion technique of Gebauer to modify the method of Oswald in view of Weber. The rationale to do so would have been the motivation provided by the teaching of the advantages to using the technique of Gebauer; that in using said technique, the resulting polyester is more easily fabricated into articles of high rigidity combined with great toughness

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(Gebauer: col. 2 lines 23-30); further, said technique is conventionally known in the art as a delicate technique for careful preparation of extruded polyester articles (Gebauer: col. 7 lines 1-7).

It would have been obvious to one with ordinary skill in the art at the time the invention was made to incorporate the disclosed blend material of reactive oligomers and polymerization catalyst of Winckler into the process of Oswald in view of Weber and in further view of Gebauer, so that the applied outer layer would polymerize and bond with said blend. The rationale to do so would have been that the blend material of Winckler has superior processing characteristics relative to conventional thermoplastics precursors, with a stable and long shelf life, and allowing for easy production, storage, transportation and processing (Winckler: column 3 lines 30-40). By incorporating said blend material of Winckler into the manufacturing process of Oswald, the durability and longevity of the finished fiber-reinforced material of Oswald may be increased.

### ***Response to Arguments***

The rejection of claims 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 15 under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,482,667 (Dunton), US Patent 6,420,047 (Winckler), and US Patent 5,186,999 (Brambach) in light of Applicant's arguments has been withdrawn.

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Applicant's arguments with respect to claims 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 15, filed on 6/04/2009, have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VICKI WU whose telephone number is (571)270-7666. The examiner can normally be reached on M-F (8:30 am-6:30 pm), every other Fri. off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Del Sole can be reached on 571-272-1130. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/V.W./

Patent Examiner, TC 1791

/Joseph S. Del Sole/

Supervisory Patent Examiner, Art Unit 1791